

## NOTES - Graphing Exponential Functions

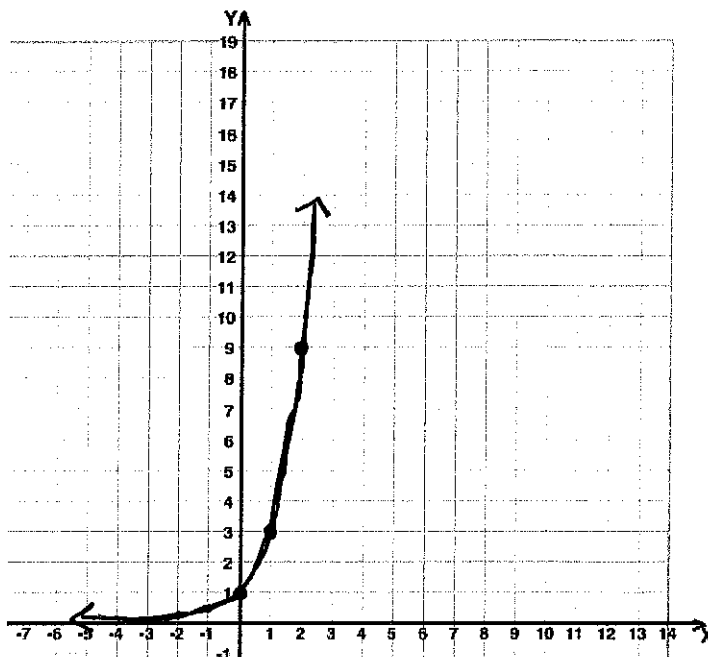
You can use the  $a$  and  $b$  values of  $y = a \cdot b^x$  and/or your graphing calculator to make a table of values and graph an exponential function.

- $a$  is the y-intercept, or in the table, the point  $(0, a)$
- $b$  is what you multiply the  $y$  values by to get from one point to the next

growth  
Example 1:  $y = 3^x$   $b=3$   
 $a=1$  is hidden  $1 \cdot 3^x$

| x  | y     |
|----|-------|
| -2 | $1/9$ |
| -1 | $1/3$ |
| 0  | 1     |
| 1  | 3     |
| 2  | 9     |
| 3  | 27    |

$\div 3$   
 $\div 3$   
 $(0, a)$   
 $\times 3$   
 $\times 3$   
 $\times 3$   
(since  $b=3$ )

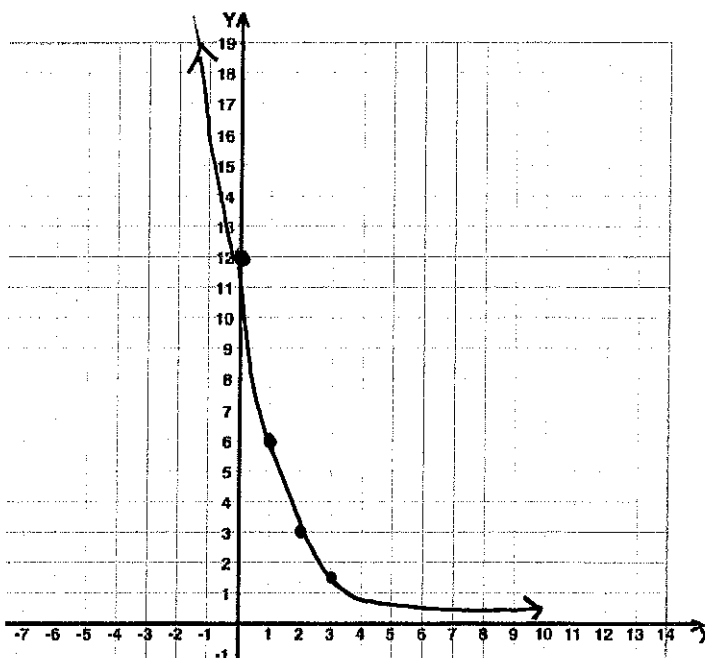


Make sure your graph doesn't cross the x-axis!

decay  
Example 1:  $y = 12 \left(\frac{1}{2}\right)^x$   
 $a=12$   $b=\frac{1}{2}$

| x  | y   |
|----|-----|
| -1 | 24  |
| 0  | 12  |
| 1  | 6   |
| 2  | 3   |
| 3  | 1.5 |

$\div \frac{1}{2}$   
 $(0, a)$   
 $\times \frac{1}{2}$   
 $\times \frac{1}{2}$   
 $\times \frac{1}{2}$

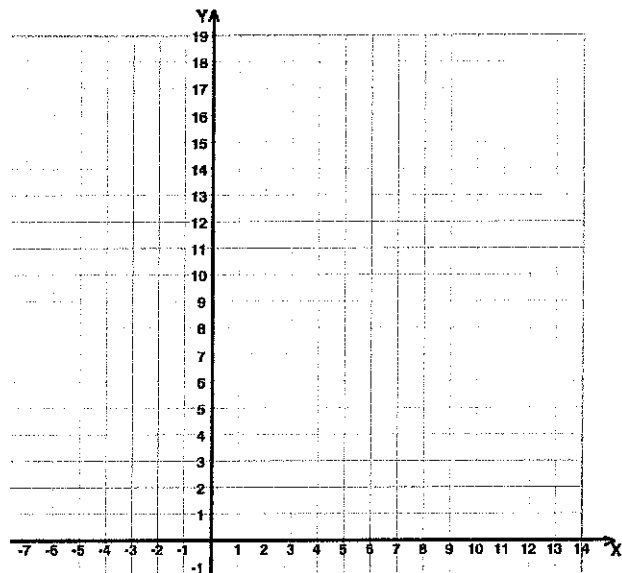


# **CLASSWORK - Graphing Exponential Functions**

- Complete the table and graph for each function.

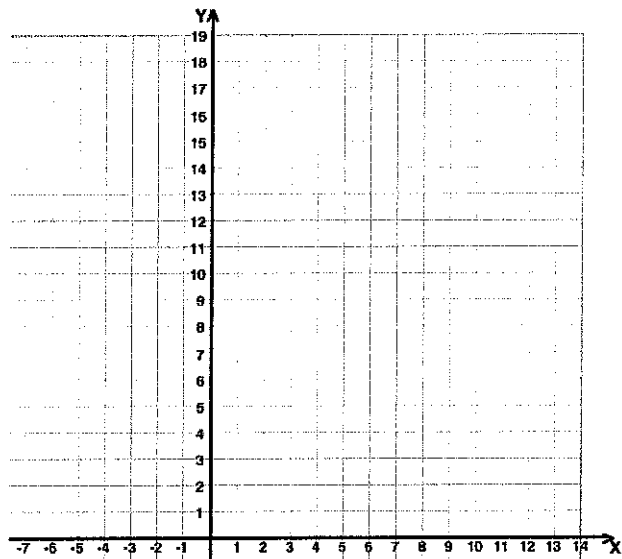
1)  $y = 3 \cdot 2^x$

| x  | y |
|----|---|
| -2 |   |
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |
| 3  |   |



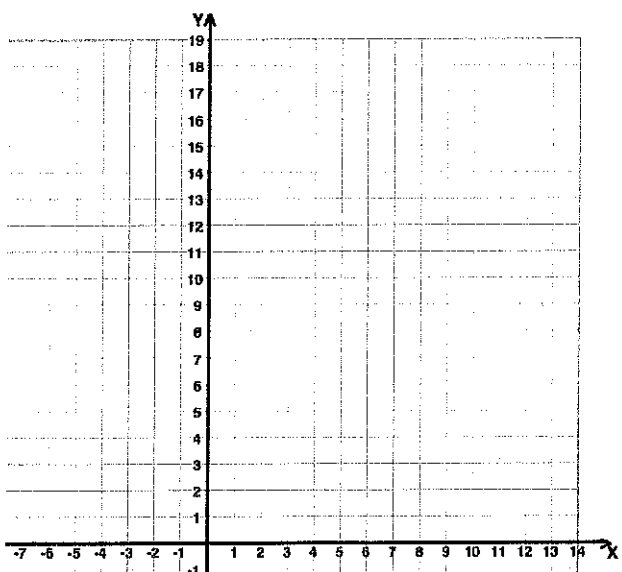
2)  $y = 9 \cdot \left(\frac{1}{3}\right)^x$

| x  | y |
|----|---|
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |
| 3  |   |



3)  $y = 0.25(4)^x$

| x  | y |
|----|---|
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |
| 3  |   |
| 4  |   |



- NOW DO p. 528 #3-7, 21-24 on graph paper and turn in!
- You must have at least 3 specific points on each graph!